**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Restoring Internet Freedom | ) | WC Docket No. 17-108 |
| | ) | |
| | ) | |

**REPLY COMMENTS OF NETFLIX, INC.**

When a consumer accesses the internet to download a favorite song, stream a TV show, or read the news of the day, she expects her broadband access provider to deliver this content—without disruption or discriminatory treatment. The internet was designed around this principle.[1] This design has led to an unprecedented era of innovation, creativity, and civic engagement. The FCC should not now undermine the stability of this design by reneging on the open internet protections that promote and protect it.

Netflix supports enforceable protections to promote an internet that is free from blocking, throttling or degrading, or engaging in paid prioritization on the last mile and at the points at which a broadband provider's network connects to the internet. Netflix does not support rolling back existing net neutrality protections as the FCC has proposed to do in the Restoring Internet Freedom Notice of Proposed Rulemaking.

---

[1] *See, e.g.*, Joint Comments of Internet Engineers, Pioneers, and Technologists on the Technical Flaws in the FCC's Notice of Proposed Rule-making and the Need for Light-Touch, Bright-Line Rules from the Open Internet Order, WC Docket No. 17-108, 8 (July 17, 2017) ("Engineer Comments") ("The second design principle is the 'end-to-end principle.' In order for a network to be general purpose, the nodes that make up the interior of the network should not assume that end points will have a specific goal when using the network or that they will use specific protocols; instead, application-specific features should only reside in the devices that connect to the network at its edge.").

## I. "Internet Access" and "The Internet" Are Not the Same Thing

The NPRM appears to misunderstand internet architecture and play fast and loose with the word "internet" to support dubious legal and factual assertions. Specifically, the NPRM confuses which entities provide which services in the internet ecosystem by conflating "internet access" with "the internet."[2]

As a "network of networks," the internet comprises myriad backbone and metro networks that connect with internet access providers, and which collectively serve as agnostic intermediaries that connect end users with services (like Netflix) at the edges of those networks. A Netflix member pays Netflix for access to Netflix's video programming. She also pays her broadband provider for the internet access service that connects her to edge services such as Netflix.

As the Commission determined just two years ago, consumers depend on broadband internet access service ("BIAS") providers for internet access.[3] BIAS providers sell consumers a connection to the internet, which transmits data to and from the end user. This connection to the internet enables consumers to utilize internet-based information services and applications. These online services and applications provide the "capability for

---

[2] Restoring Internet Freedom, *Notice of Proposed Rulemaking*, 32 FCC Rcd. 4434, 4442-43 ¶¶ 27-29 (2017) ("NPRM").

[3] The Commission made this determination based on a factual record that "broadband Internet access service is marketed today primarily as a conduit for the transmission of data across the Internet." Protecting and Promoting the Open Internet, *Report and Order On Remand, Declaratory Ruling, and Order*, 30 FCC Rcd. 5601, 5757 ¶ 354 (2015) ("*2015 Open Internet Order*"). The D.C. Circuit affirmed the reasonableness of this finding. *United States Telecom Ass'n v. FCC*, 825 F.3d 674, 698 (D.C. Cir. 2016) ("That consumers focus on transmission to the exclusion of add-on applications is hardly controversial. Even the most limited examination of contemporary broadband usage reveals that consumers rely on the service primarily to access third-party content.").

generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information" over the transmission function provided by the BIAS provider.[4]

In a departure from previous FCC findings, the NPRM now conflates the roles of broadband access providers (which it refers to as "Internet service providers") and internet content and information services, arguing:

> We believe that Internet service providers offer the "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications." Whether posting on social media or drafting a blog, a broadband Internet user is able to generate and make available information online. Whether reading a newspaper's website or browsing the results from a search engine, a broadband Internet user is able to acquire and retrieve information online. Whether it's an address book or a grocery list, a broadband Internet user is able to store and utilize information online. Whether uploading filtered photographs or translating text into a foreign language, a broadband Internet user is able to transform and process information online.[5]

This faulty logic misconstrues how the internet works, and it is inconsistent with the Commission's own factual record reflecting how consumers purchase and use internet connectivity. Consumers use the information services and capabilities once they purchase internet access—but that does not mean that the BIAS provider is the entity offering or providing these functions.[6] Selling access to the internet does not mean the BIAS provider

---

[4] 47 U.S.C. § 1001 (6)(A).

[5] *See* NPRM at 4442 ¶ 27 (explaining its "belief" that broadband access providers fall under the definition of "information services": "In short, broadband Internet access service appears to offer its users the 'capability' to perform each and every one of the functions listed in the definition— and accordingly appears to be an information service by definition. We seek comment on this analysis."). This misunderstanding animates the comments of a group of computer scientists, network engineers and internet pioneers who wrote, "the NPRM displays a stunning lack of technical knowledge." Engineer Comments at 30.

[6] Of course the companies that sell broadband access to consumers can and do offer online applications and information services, just as third party services do. For example, AT&T operates a policy blog and Google Fiber's parent company operates a search engine. But the fact that a company may offer both information services and telecommunications as

is offering the functions and capabilities that are performed and offered to the consumer by internet content providers. The theory advanced in the NPRM is akin to the U.S. Postal Service claiming it is in the DVD rental business just because it ships DVDs.

The 2015 Open Internet Order focused on the broadband provider's *access* function as the cornerstone of its net neutrality protections. This unique gatekeeping power enables broadband access providers to control what traffic comes on and off their networks.[7] As a consequence, the 2015 Open Internet Order limited the scope of open internet protections to broadband internet *access* services that sell internet *connectivity* to consumers.[8] The FCC determined that the offering of broadband internet connectivity includes "the

---

defined by the Act is neither here nor there, because, as the D.C. Circuit explained, information services and telecommunications services are not mutually exclusive. The relevant inquiry is: do broadband providers make a standalone offering of telecommunications? *United States Telecom Ass'n v. FCC*, 825 F.3d at 704-05.

[7] *See 2015 Open Internet Order* at 5632 ¶ 82 ("Technological advances have given broadband providers the ability to block content in real time, which allows them to act on their financial incentives to do so in order to cut costs or prefer certain types of content. . . Similarly, broadband providers have incentives to charge for prioritized access to end users or degrade the level of service provided to non-prioritized content."); *see also* Engineer Comments at 31 (observing that "in the absence of a clear and limited Open Internet rule . . . ISPs would be free to block, throttle, or speed up data based on its content, source, destination, or what service or application generated it," and "ISPs could degrade (or altogether block) certain protocols, content, or websites").

[8] *See 2015 Open Internet Order* at 5682 ¶ 187; 47 C.F.R. § 8.2(a) (defining broadband internet access service as "a mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service."). This approach is well-grounded in Commission precedent. In 2010, the Commission came to essentially the same conclusions as the *2015 Open Internet Order* about the ability of BIAS providers to use their gatekeeper power to harm consumers and competitors. *See* Preserving the Open Internet, Broadband Industry Practices, *Report and Order*, 25 FCC Rcd. 17905, 17916 ¶ 22 (2010) ("*2010 Open Internet Order*") ("Today, broadband providers have incentives to interfere with the operation of third-party Internet-based services that compete with the providers' revenue-generating telephony and/or pay-television services.").

representation to retail customers that they will be able to reach 'all or substantially all Internet endpoints[,]' [which] necessarily [also] includes the promise to make the interconnection arrangements necessary to allow that access."[9] To protect consumers and ensure that BIAS providers do not abuse their gatekeeper power at the point of interconnection with other networks (including CDNs), the Commission in 2015 adopted a process to review and resolve interconnection complaints on a case-by-case basis.[10] Netflix supports this light-touch oversight and urges the Commission to maintain it.

## II. The NPRM and Commenters Misconstrue the Role CDNs Play in the Delivery of Internet Content

In addition to conflating internet access with internet content, the NPRM and some commenters misunderstand how Content Delivery Networks ("CDNs") operate and function. CDNs play an important role in making the internet more efficient. CDNs facilitate efficient delivery of content, allowing content to travel over fewer networks and reducing utilization of internet backbone capacity by storing content in various locations closer to consumers.[11] Netflix has invested in its own CDN called Open Connect.[12] By storing content closer to end users, Open Connect and other CDNs free capacity on other parts of the network, which improves delivery for all types of internet content, not just data stored by those CDNs.[13]

---

[9] *2015 Open Internet Order* at 5693-94 ¶ 204.

[10] *2015 Open Internet Order*, 30 FCC Rcd. at 5685-86 ¶¶ 193, 195 (noting that "anticompetitive and discriminatory practices in this portion of broadband Internet access service can have a deleterious effect on the open Internet, and therefore [we] retain targeted authority to protect against such practices").

[11] Engineer Comments at 13-15 (describing the development of CDNs).

[12] *See generally,* Netflix Open Connect, https://openconnect.netflix.com/en.

[13] *See* Engineer Comments at 14.

BIAS providers generally interconnect with CDNs either at a nationally recognized internet exchange point or at one or more of the BIAS provider's own facilities.[14] For Netflix, the vast majority of our global traffic is delivered via direct connections between Open Connect and the residential internet access providers our members use to access the internet. Most of these connections are localized at regional points of interconnection that are geographically closest to a mutual customer. Netflix provides Open Connect servers to BIAS providers free of charge, and thousands of BIAS providers around the world participate.[15]

While CDNs facilitate efficient delivery of content for the internet at large, they do not "deliver" or "transmit" the content to the end user. A CDN is a group of servers that host content. It may be third-party servers (e.g., Akamai), which host content from all manner of internet content providers, both large and small. Or it may be servers owned by the internet content provider, such as Netflix's Open Connect. In the case of Netflix's Open Connect, Netflix does not own or operate any "pipes" connecting the servers to a user's home. This is why Netflix's "Terms of Use" require our members to have internet access to use Netflix.[16]

To use an offline analogy, Netflix Open Connect is like the warehouses used to store DVDs for Netflix's DVD.com service. Netflix may maintain the warehouse storage facilities to house the DVDs, but it does not physically deliver the DVDs to members. The U.S. Postal

---

[14] *See Internet Exchange Points*, Data Center Map, http://www.datacentermap.com/ixps.html (last visited Aug. 26, 2017).

[15] When Netflix is able to interconnect directly with an internet access provider using Open Connect, Netflix incurs all of the costs of delivering that content to the internet access provider's doorstep and storage functions.

[16] *See* Netflix Terms of Use, https://help.netflix.com/legal/termsofuse.

Service does that. By maintaining warehouses all over the country, Netflix makes it easier and less resource-intensive for the postal service to deliver the DVDs and also reduces interstate traffic. For example, if you serve Chairman Pai's home state of Kansas from the Wichita warehouse, there will be fewer trucks congesting the roads than if Netflix "serves" the DVD from a warehouse in Colorado or California.

Suggestions by some commenters[17] that Netflix Open Connect provides telecommunications service is incorrect and misunderstands both how CDNs and the internet work. "Telecommunications service" refers to "the offering of telecommunications for a fee directly to the public."[18] Telecommunications, in turn, requires "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received."[19] Like most CDNs, Open Connect relies on third party transmission facilities, including those provided by BIAS providers, to transmit and fill its cache servers with content, as well as to transmit that content to end users. Open Connect does not provide "an offering of telecommunications for a fee directly to the public" because it has no telecommunications to offer. Open Connect has no facilities connected to the end user and cannot deliver traffic directly to the end user. Only a BIAS provider can transmit content across its last mile to its subscribers, and that function is precisely what a customer pays her BIAS provider to do.

---

[17] *See* Comments of NCTA – The Internet & Television Association, WC Docket No. 17-108, 23-24 (July 17, 2017); Comments of AT&T Services Inc., WC Docket No. 17-108, 43-44 (July 17, 2017) ("AT&T Comments").

[18] 47 U.S.C. § 153(53).

[19] *Id.* § 153(50).

This question has already been asked and answered by the Commission and upheld by the D.C. Circuit, which found that the Commission was "justified treating third-party DNS and caching services differently on the ground that when such services are 'provided on a stand-alone basis by entities other than the provider of Internet access service[,] . . . there would be no telecommunications service to which [the services are] adjunct.'"[20] Conversely, some BIAS providers also sell CDN services and this may impact the classification of caching service if it is used as an "adjunct" to the telecommunications offering. Again, the D.C. Circuit has addressed this issue, upholding the Commission's determination that "[o]nce a carrier uses a service that would ordinarily be an information service—such as DNS or caching—to manage a telecommunications service, that service no longer qualifies as an information service under the Communications Act. The same service, though, *when unconnected to a telecommunications service, remains an information service."*[21]

## III. BIAS Provider Interconnection with CDNs Is Not a Fast Lane Nor Paid Prioritization

Some commenters (and the NPRM itself) either insinuate or claim outright that direct interconnection between CDNs and BIAS providers is a form of paid prioritization.[22] That is wrong. Paid prioritization refers to a financial arrangement where a third-party content owner pays a network provider a fee to create a "fast lane" where one person's data traveling along the network gets priority delivery over another's. Such fast lanes are

[20] *United States Telecom Ass'n v. FCC*, 825 F.3d at 705 (quoting *2015 Open Internet Order* at 5769 ¶ 370 n.1046).

[21] *Id.* at 706.

[22] *See, e.g.*, AT&T Comments at 43-44; NPRM at 4462 ¶ 87.

akin to a multi-lane highway where one of the lanes can be used only if the driver pays a toll, and the highway is the only route to the intended destination.[23] However, the toll lane becomes attractive only because the other lanes are slower. As explained by technical experts in the record of this docket and elsewhere, all bits in an open internet travel at the same speed.[24] Bits move as fast as the network permits and bits traveling from Wichita will reach a household in Kansas at essentially the same time as bits traveling from Colorado so long as the network is uncongested.[25] Authorizing paid prioritization gives BIAS providers a perverse incentive to boost revenues by allowing their networks to congest and reduce capital investments in network improvements so that prioritization becomes a monetizable product.

In contrast, direct interconnection between a BIAS provider and a CDN, whether single purpose, like Open Connect, or third party service, like Akamai or Level 3, does not result in prioritization. Instead, CDNs help BIAS providers reduce costs and better manage congestion, which allows all content to reach its intended destination at the fastest speed the network is capable of delivering.[26] Content delivered by Open Connect does not

---

[23] *See 2015 Open Internet Order* at 5632 ¶ 82 ("Such practices could result in so-called 'tolls' for edge providers seeking to reach a broadband provider's subscribers, leading to reduced innovation at the edge, as well as increased rates for end users, reducing consumer demand, and further disrupting the virtuous cycle.").

[24] *See* Engineer Comments at 32 n.77 (noting that although the Internet Protocol can technically specify a header field for IP packets known as "differential service," actual "traffic prioritization on the public Internet is almost nonexistent").

[25] Typically, backbone networks are deployed using fiber optic cable, which transmits content at the speed of light. A bit will reach Wichita from Colorado in about four milliseconds on an uncongested network.

[26] *See* Richard Whitt, *Net Neutrality and the Benefits of Caching*, Google Public Policy Blog (Dec. 15, 2008), https://publicpolicy.googleblog.com/2008/12/net-neutrality-and-

prioritize Netflix data or make it "go ahead of" or faster than any other content or content sources.

## IV. CONCLUSION

Netflix believes that strong net neutrality is critical to maintaining a vibrant, open internet to promote free expression, diversity of content, and continued innovation. Unfortunately, the course of action proposed in the NPRM is likely to have the opposite effect. We hope the FCC will recognize that keeping the network open drives job growth and innovation and will maintain the kind of strong net neutrality protections currently in force.

Respectfully submitted,

/s/

Corie Wright
Director, Global Public Policy
Josh Korn
Manager, Global Public Policy
***Netflix, Inc.***
1455 Pennsylvania Ave, NW
Suite 650
Washington, DC 20004

August 30, 2017

benefits-of-caching.html (explaining that Google's CDN similarly does not "require (or encourage) that Google traffic be treated with higher priority than other traffic").